ONLINE SECURE PAYMENT SYSTEM USING CAPTCHA AND VISUAL CRYPTOGRAPHY

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ABSTRACT

Nowadays E-Commerce market is astonishingly growing throughout the world. Due to increase in online transaction, Debit or Credit card fraud and personal information security are major concerns for customers, merchants and banks. This paper presents a new approach for providing limited information only that is necessary for fund transfer during online shopping thereby safeguarding customer data, increasing customer confidence and preventing identity theft. A novel family of graphical password systems built on top of Captcha technology. It addresses a number of security problems altogether, such as online guessing attacks. The method uses combination of application of Captcha and visual cryptography for this purpose.

KEY WORDS: Visual Cryptography, Captcha , Online Payment, Security.

I. INTRODUCTION

In every work of a daily life internet has become most used standard for communication, socialization and online transactions. Many of us work on the internet for transmitting confidential information in various form. Hence, secure communication of data is an important issue to be consider. There are various techniques used for securing data like encryption, visual cryptography, image hiding etc. As digitalization progresses online shopping has made human life more easier than ever. But increase in online transaction, Debit or Credit card fraud and personal information security are major concerns for customers, merchants and banks. Many facilities are available for easier and more secure transaction. But the frauds are still there. In this paper a method is proposed to develop a well promising secure system in which we are going to use visual cryptography along with Captcha technique. With the help of Visual cryptography the secret image i.e, Captcha is divided into two shares and distributed to the recipient in various modes. Received shares are stacked together to produce the original secret image back.

II. PREVIOUS METHODOLOGY

It is nearly impossible to be sure whether a device that is connected to the internet should be considered trustworthy and all sensitive details like bank account number, ATM pin, etc. are secure or not. The problems which are occurring in transaction processing system are, the need to handle thousands of simultaneous user, the need to allow many users to work on the same set of data, with immediate updating and the need to handle errors in a safe and consistent manner.

Phishing is another problem for online transactions. A phishing website or message tries to trick the user into revealing personal information by appearing to be from an original source, such as a social network, bank, or even Google. Communication channels such as email, webpage, IRC and instant messaging services are popular. Phishing is a recurrent threat that is growing rapidly these days. Thus to overcome the drawbacks of current system we are implementing Captcha along with enhanced Visual Cryptography technique.

III. PROPOSED METHODOLOGY

The proposed scheme is the generation of two shares with the help of Visual Cryptography. For authentication of user the system first generates OTP and then OTP is converted into Captcha. By applying Visual Cryptography algorithm on the Captcha image shares are generated.

A. CAPTCHA

A CAPTCHA stands for Completely Automated Public Turing test to tell Computers and Humans Apart. It is a type of test used in computing to determine whether or not the user is human. Captcha is usually a graphic image with a series of distorted letters on an equally distorted or multi-coloured background.

This technology is used mostly to block spammers that try to automatically harvest email addresses or try to automatically sign up for or make use of websites blogs or forums. It takes an average person approximately 10sec to solve a typical Captcha.

B. Visual Cryptography

Due to advances in digital world security has become inseperable issue while transmitting image. Visual Cryptography is a technique developed by Moni Naor and Adi shamir in 1994. It is a special encryption technique to hide information in images in such a way that it can be decrypted by human vision if the correct key images are used.
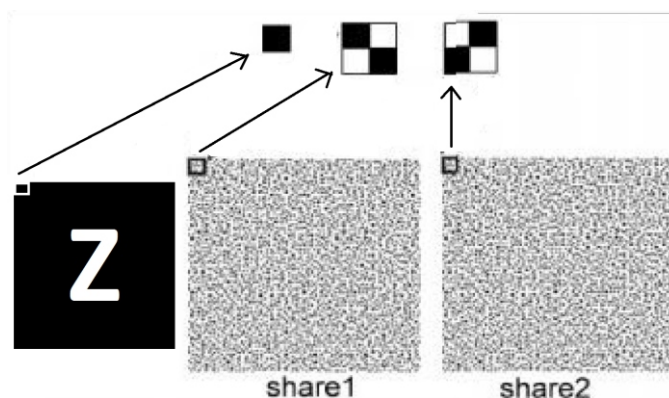

Fig 1. Generation of shares

In the proposed method original image is split into two component images. As shown in Fig.1 each component image has a pair of pixel for every pixel in the original image. For each pixel of the original image two matrices of size 2x2 are generated. First matrix is generated randomly by the system and other matrix is generated by XOR operation between the randomly generated matrix and pixel value of the original image. When both the shares are received by the recipients they are overlapped using AND operation. Thus original key image is generated.

IV. SYSTEM ARCHITECTURE

The System Architecture shown in Fig2. consists of client, Merchant Server and Bank Server.

Client: Client is a person who wants to buy some product online on merchant site, But it is necessary that the person knows the merchant site is fraud or real. For that user first enter OTP which can generate by bank and then verify that merchant site is phishing or not. After know that merchant site is real customer complete further proceed and select or buy product.

Merchant Server: Merchant server hosts the original website it consists of all the database of products it is managed by DBA. It is registered with bank server. Merchant verify if the user is authentic or not by using Login functionality. Merchant sends its Server ID and Unique Customer ID to bank server for verification purpose. Adding removing products into cart. Managing database of products. Also checking transactions that has happened.

Bank Server: Bank server verifies client and merchant server using client UID or merchant id. Bank server creating Hash Function for OTP. It divide's OTP into two share's. Bank sends OTP shares to merchant and client. At last entered OTP is verified whether it is correct or not.
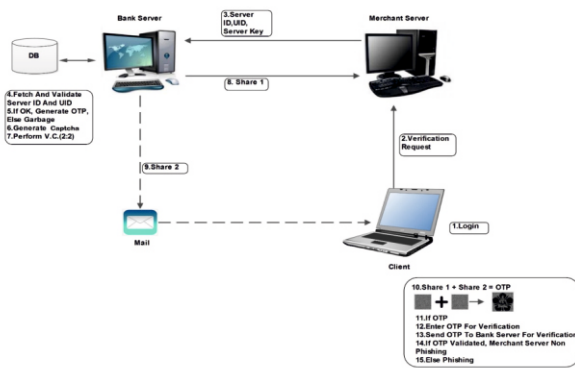
Fig 2.System Architecture

V. APPLICATIONS

Proposed Online payment systems protect consumer personal information by not requiring the disclosure of account numbers or other sensitive personal data to online merchants or other third parties. During the checkout process, the merchant redirects the consumer to their financial institution's online banking site where they login and authorize charges. After charges are authorized, the financial institution redirects the consumer back to the merchant site. All network communications are protected using encryption

VI. CONCLUSION AND FUTURE SCOPE

With the growing cashless era, issues of secure transactions arise. Because of that, to help the user to transact fearlessly, a method is presented to protect user from phishing website and avoid misuse of the credentials. Hence the system will initiate more secure online transactions.

For processing large scale of data Hadoop or Big Data can be used. Instead of Captcha QR can be used. System can be enhanced to cloud environment where based on number of user access, cloud configuration will change and minimize the response time. In addition mobile application can be developed for implementing the system.

VII. ACKNOWLEDGEMENT

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